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EXAMINER	
KHOO, FOONG LIN	
ART UNIT	**PAPER NUMBER**
2664	

DATE MAILED: 10/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/010,774	YE, BAOQING	
	Examiner	Art Unit	
	F. Lin Khoo	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *6/7/2002*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

The disclosure is objected to because of the following informalities:

(1) On page 16, in line 15, the early traffic regulator module is labeled as 232, but in Figure 2, the element number for the early traffic regulator module is labeled as 228.

(2) On page 27, in line 18-20, "The processing of the received packets corresponding to a non-responsive flow then stops in step 528." In Figure 5, the step is labeled as 530. There is no element step 528 in Figure 5.

(3) On page 28, in line 27, "step 526" is not shown in Figure 5. There is no "step 526" in Figure 5.

(4) On page 29, in line 23, "maximum threshold 806" is labeled as element number 802 in Figure 8.

(5) On page 31, in line 26-27, "The second from last row of Fig. 9 shows the flow throughputs for each of the nine flows after AFFC processing." The flow throughputs

for each of the nine flows after AFFC processing is shown in the second from last row of Figure 7.

(6) On page 34, in line 16, "2000 bits/s" is 200 bits/s in flow F7 in Figure 7.

(7) On page 37, in line 16, "In step 912, the bottleneck node 110 sends....." is referring to bottleneck node 110, but in line 15 it is referred to as 127.

(8) On page 39, in line 24, the Rt-S subroutine 1034 is referred to as 1032 in Figure 11.

(9) On page 41, in line 17, "destination nodes 1202, 1212, respectively,....." is referred to as destination nodes 1202, 1214, respectively in Figure 12.

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 6, 7, 9 and 18 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 6, 7 and 9 recite the limitation "said preceding network node" in lines 8, 3, 2 and 7 respectively. There is insufficient antecedent basis for this limitation in the claim.

Claim 18 recites the limitation "said network node" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-9, 10-12, 14-16, 18-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Nishihara (U.S. Patent No. 6,424,620).

Regarding Claim 1, Nishihara discloses a packet flow control method comprising the steps of: detecting congestion (col 9, lines 41-47) in a first node (Fig. 1, element 24) along a packet flow path (Fig. 2, col 8, lines 35-38. VIN1 is associated with such a flow path) between a source device (Fig. 1, element 21) and a destination device (Fig. 1, element 22); identifying a node in said path preceding said first node (Fig. 1, element 23 is identified as a node in said path preceding said first node); and transmitting to said

preceding network node a traffic regulation signal used to initiate flow rate control on flows identified from information included in said traffic regulation signal (col 9, lines 47-52).

Regarding Claim 2, Nishihara discloses wherein said information included in said traffic regulation signal includes a destination address. (Fig. 5, element 46, col 10, lines 19-39. The BRM packet (backward resource management packet) is associated with the traffic regulation signal which includes a destination address).

Regarding Claim 3, Nishihara discloses wherein said step of identifying a node in said path includes the step of: transmitting a signal to said destination device requesting path information (col 9, lines 26- 67; col 10, lines 11-15 and lines 35-39. The congestion information, source edge address and the destination edge address in the RM packet to the destination device returned from the destination edge device with the BRM packet is associated with path information, see col 9, lines 29-32).

Regarding Claim 4, Nishihara discloses wherein the step of detecting congestion at a first node includes the steps of: monitoring to detect when said first node is saturated with packet traffic for a preselected period of time (Fig. 7, element 76; col 9, lines 37-40. The destination edge device (first node) monitors the average flowing speed in the RM packets to detect congestion. It is inherent (as disclosed by Tominaga et al. (U.S. Patent No. 5,309,431) in the same field of endeavor in column 18, lines 30-

33) that an average flowing speed is computed over a preselected period of time where speed can be determined to be number of RM packets in the preselected period of time).

Regarding Claim 5, Nishihara discloses wherein said traffic regulation signal further includes packet flow path information. (Fig. 4 and Fig. 5; col 9, lines 29-32; col 10 lines 11-15 and lines 35-39).

Regarding Claim 6, Nishihara discloses further comprising the steps of: operating said preceding network node to transmit an additional traffic regulation signal to an additional preceding node to cause the additional preceding node to initiate flow rate control on flows directed to a destination address identified in said additional traffic regulation signal (Fig. 1 and Fig 10, element 26 (network monitor device); Fig. 3, element 25-1 (node device) is associated with the additional preceding node and it detects inside blocking (congestion) where it notifies the network monitor device via the source edge device (Fig. 3 and Fig. 6, element 23) by an additional traffic regulation signal to initiate flow rate control. See col 8, line 59 to col 9 line 67).

Regarding Claim 7, Nishihara discloses further comprising: operating said preceding network node to perform a forced reduction in the flow rate of at least one packet flow in response to detecting traffic congestion (col 10, lines 51-59).

Regarding Claim 8, Nishihara discloses further comprising: operating the first node to perform a forced reduction in the flow rate of at least one packet flow in response to detecting traffic congestion (col. 18, lines 60-63; col 10, lines 51-59. A source edge device (preceding network node) and a destination edge device (first node) are separately described in the function in the reference. It is stated that both devices can be integrated into the identical edge device. It is inherent once integrated that the destination edge device (first node) can then do the same function as the source edge device (preceding node) in performing a forced reduction in the flow rate of at least one packet flow in response to detecting traffic congestion).

Regarding Claim 9, Nishihara discloses wherein the forced reduction in the flow rate performed in the first node is performed as a function of a base line flow rate for traffic flowing through the first node (col. 18, lines 60-63; col 17, lines 23-32. A source edge device (preceding network node) and a destination edge device (first node) are separately described in the function in the reference. It is stated that both devices can be integrated into the identical edge device. It is inherent once integrated that the destination edge device (first node) can then do the same function as the source edge device (preceding node) in performing a forced reduction in the flow rate as a function of a baseline flow rate for traffic flowing through the node. The permissible average flowing speed is associated with the baseline flow rate); and wherein the forced reduction in the flow rate performed in the preceding network node is performed as a

function of a base line flow rate for traffic flowing through the preceding network node (col 17, lines 23-32).

Regarding Claim 10, Nishihara discloses a method of implementing flow control in a communications network including a first node (Fig. 1, element 23), a second node (Fig. 1, element 24) and a destination node (Fig. 1, element 22), the first node being located upstream of the second node on a communications path to said destination device, the method comprising the steps of: operating the second node to detect when the second node is saturated with traffic for a period of time (col 9, lines 41-47; Fig. 7, element 76; col 9, lines 37-40. The destination edge device (second node) monitors the average flowing speed in the RM packets to detect congestion. It is inherent (as disclosed by Tominaga et al. (U.S. Patent No. 5,309,431) in the same field of endeavor in column 18, lines 30-33) that an average flowing speed is computed over a preselected period of time where speed can be determined to be number of RM packets in the preselected period of time); in response to detecting that said second node is saturated with traffic for said period of time, operating the second node to send a first traffic regulation signal (the BRM packet is associated with the first traffic regulation signal) to the first node to trigger said first node to perform traffic regulation of flow rates on flows of packets directed to said destination device (col 9, lines 47-52).

Regarding Claim 11, Nishihara discloses wherein, in response to detecting that said second node is saturated with traffic for said period of time, said second node performs the step of: initiating a path determination operation to determine at least a portion of a path of a flow causing congestion at said second node (col 9, lines 26- 67; col 10, lines 11-15 and lines 35-39. The congestion information, source edge address and the destination edge address in the RM packet to the destination device returned from the destination edge device with the BRM packet is associated with path information, see col 9, lines 29-32).

Regarding Claim 12, Nishihara discloses further comprising: operating said second node to receive path information identifying said first node as part of said path of the flow causing congestion (Fig. 4 and Fig. 5; col 9, lines 29-32; col 10 lines 11-15 and lines 35-39. The first node (source edge device, Fig. 1, element 23) is included as an address in the RM packet received by the second node (destination edge device, Fig.1, element 24) which identifies first node as part of path of the flow causing congestion).

Regarding Claim 14, Nishihara discloses further comprising: operating the first node, in response to said first traffic regulation message, to perform forced flow rate reduction operations on at least some flows directed to said destination node (col 10, lines 51-59).

Regarding Claim 15, Nishihara discloses further comprising: operating the first node to transmit a third traffic regulation message (inside blocking congestion information (Fig. 6, element 73), col 11, lines 45-51)) to a node located upstream (Fig.1, element 26 (network monitor) of said first node in said path of the flow causing the congestion to trigger flow control operations in said node located upstream of said first node (Fig. 6, element 73 (inside blocking congestion information), Fig. 10, element 104 (edge device interface). See col 9, lines 53-67; col 11, lines 42-55; col 13, lines 1-22. The network monitor (upstream node) changes the transfer channel so as to avoid the location of the congestion via the inside blocking congestion information received from the source edge device (first node). This is associated with triggering flow control operations at the upstream node).

Regarding Claim 16, Nishihara discloses wherein operating the first node to perform forced flow rate reduction operations includes: comparing packet flow rates of packet flows directed to said destination to at least one flow rate baseline for said first node (col 17, lines 23-32); and dropping packets from packet flows directed to said destination which have flow rates exceeding the flow rate base line to which the particular flow rate is compared (col 10, lines 53-59).

Regarding Claim 18, Nishihara discloses a communications system for communicating information as flows of packets, the system comprising: a first network node (Fig. 1, element 24) including:

i. congestion control means for detecting congestion at said network node (col 9, lines 41-47);

ii. traffic flow path determination means for determining the path of at least one packet flow causing congestion at said first network node (col 9, lines 26- 67; col 10, lines 11-15 and lines 35-39. The congestion information, source edge address and the destination edge address in the RM packet to the destination device returned from the destination edge device with the BRM packet is associated with path information, see col 9, lines 29-32); and

iii. early traffic regulation signaling means for transmitting a traffic regulation signal to initiate traffic regulation at an upstream network node (col 9, lines 47-52); and an upstream network node, the upstream network node (Fig. 1, element 23) being coupled to the first network node, the upstream network node including:

i. means for receiving traffic regulation signals from said first network node (Fig. 6 element 64, col 11, lines 27- 40) ; and

ii. flow control means for performing flow rate reduction operations on one or more traffic flows identified from information included in received traffic flow control messages (Fig. 6, col 10, lines 44-59).

Regarding Claim 19, Nishihara discloses further comprising: a destination node (Fig. 1, element 22) coupled to said first network node for serving as the destination of at least some of the packet flows passing through the first network node, the destination node including: means for reconstructing packet flow paths from received information

(Fig. 6, Fig. 7,Fig. 8, Fig.9, Fig. 11; col 10, line 44 to col 13, line 33); and means for transmitting reconstructed packet flow path information to the first network node in response to a request for path information from said traffic flow path determination means (col 9, lines 26- 67; col 10, lines 11-15 and lines 35-39. The congestion information, source edge address and the destination edge address in the RM packet to the destination device returned from the destination edge device with the BRM packet is associated with path information, see col 9, lines 29-32).

Regarding Claim 20, Nishihara discloses wherein the traffic regulation signal generated by the early traffic regulation signaling means of the first network node includes a destination address corresponding to said destination node (Fig. 4 and Fig. 5, element 46, col 10, lines 4-39. Fig. 13 (a and b), col 15, lines 23-35; The RM and BRM packet is associated with the traffic regulation signal and it is inherent that it includes a destination address in the header for delivery of the packet).

Regarding Claim 21, Nishihara discloses wherein the first network node includes traffic flow rate baselines generated from traffic flowing through the first network node over a period of time (Fig. 2, col 8, lines 26-58; Fig. 7 (element 77), col 12, lines 7-13. The permissible average flowing speed is judged by element 77 and this is associated with traffic flow rate baselines generated from traffic flowing through the first network node over a period of time); and wherein the upstream network node includes traffic

flow rate baselines generated from traffic flowing through the upstream network node over a period of time (Fig. 6, col 11, lines 28- 55).

Regarding Claim 22, Nishihara discloses wherein the first network node further comprises flow control means for performing a flow control operation including the dropping of packets from at least one packet flow as a function of at least one of the first network node traffic flow rate baselines (col. 18, lines 60-63; col 17, lines 23-32; col 10, lines 51-59. A source edge device (upstream network node) and a destination edge device (first node) are separately described in the function in the reference. It is stated that both devices can be integrated into the identical edge device. It is inherent once integrated that the destination edge device (first node) can then do the same function as the source edge device (upstream network node) performing a flow control operation including the dropping of packets (traffic beyond the permissible flow speed will be abandoned) from at least one packet flow as a function of at least one of the first network node traffic flow rate baselines. The permissible average flowing speed is associated with the traffic flow rate baseline).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishihara (U.S. Patent No. 6,424,620) in view of Tominaga et al. (U.S. Patent No. 5,309,431).

Regarding Claim 13, Nishihara does not disclose further comprising: operating the second node to detect when the second node ceases to be saturated with traffic after being saturated for said period of time; in response to the second node detecting that has ceased to be saturated with traffic, sending a second traffic regulation message to said first node to cause said first node to cease traffic regulation of flow rates on flows of packets directed to said destination device. Tominaga et al. in the same field of endeavor, discloses further comprising: operating the second node to detect when the second node ceases to be saturated with traffic after being saturated for said period of time (col 6, lines 35-48. The congested state detecting unit, element 309, accommodated within its own packet-switching node (second node in this case) can detect the occurrence of a congested state or the cancellation of a congested state); in response to the second node detecting that has ceased to be saturated with traffic, sending a second traffic regulation message to said first node to cause said first node to cease traffic regulation of flow rates on flows of packets directed to said destination device (col 6, lines 50-58. The congested state information unit 310 informs other packet-switching nodes (first node in this case) via the congested state information 312 (this would be the second traffic regulation message in this case) that a congested state

is cancelled). Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to include the teachings of Tominaga et al. into the system of Nishihara to provide an apparatus for regulating each route in which only a route passing a transmission line in which a congestion occurs can be regulated by a simple control processing and the route can be readily restored from the congestion state.

8. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishihara (U.S. Patent No. 6,424,620) in view of Teraslinna. (U.S. Patent No. 5,706,279).

Regarding Claim 17, Nishihara does not disclose further comprising, in said first node, distinguishing, for traffic flow control purposes, between packet flows corresponding to protocol types which are responsive to congestion control signals and packet flows corresponding to protocol types which are not responsive to congestion control signals. Teraslinna in the same field of endeavor, discloses further comprising, in said first node, distinguishing, for traffic flow control purposes, between packet flows corresponding to protocol types (Fig. 3, col 6, lines 8-17) which are responsive to congestion control signals (Fig. 4, col 6, line 48 to col 7, line 6. Protocol types that are responsive to congestion control signals are associated with packets that do not violate (pass) bandwidth parameter controls) and packet flows corresponding to protocol types which are not responsive to congestion control signals (Fig. 4, col 6, lines 41-47.

Protocol types that are not responsive to congestion control signals are associated with packets that violate the bandwidth parameter controls). Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to include the teachings of Teraslinna into the system of Nishihara to control a flow of packets forwarded to a fast packet switching network in accordance with a predetermined traffic contract.

9. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nishihara (U.S. Patent No. 6,424,620) in view of Patel et al. (U.S. Patent No. 6,865,185).

Regarding Claim 23, Nishihara does not disclose wherein the first network node further comprises: a plurality of packet queues, one packet queue being used to store packets corresponding to a single or each group of flows to which are to be subject to different flow rate reduction operations are part of the processing by said flow control means. Patel et al. in the same field of endeavor discloses wherein the first network node further comprises: a plurality of packet queues Fig. 2 (element 74), one packet queue being used to store packets corresponding to a single or each group of flows to which are to be subject to different flow rate reduction operations are part of the processing by said flow control means (Fig. 2, col 10, lines 4-11; Fig. 11, col 16, lines 1-22. The control parameter generator 180 receives available bandwidth estimates from the dynamic bandwidth estimator 34 and generates dynamic congestion control

parameters for the associated class of service queue 74 based on the bandwidth estimates. This is related to different flow rate reduction operations based on the bandwidth estimates). Therefore, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to include the teachings of Patel et al. into the system of Nishihara for controlling congestion within a network include generating dynamic congestion control parameters for a traffic queue based on a status of the network.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 4,769,811 to Eckberg, Jr. et al. relates to a method for controlling congestion in a packet switching network using a packet dropping algorithm to determine when to drop a marked packet wherever the network is congested at any point along the path being traversed by the marked packet.

U.S. Patent No. 5,835,484 to Yamato et al. relates to a method and an apparatus for controlling a congestion in the communication network, capable of realizing a recovery from the congestion state by the operation at the lower layer level for the communication data transfer alone, without relying on the upper layer protocol to be defined at the terminals.

U.S. Patent No. 5,090,011 to Fukuta et al. relates to a packet switching equipment housing wherein a plurality of pairs of an input line and an output line is provided with a monitor circuit for monitoring a packet congestion state in the packet switching equipment for each output line.

U.S. Patent No. 5,457,687 to Newman relates to a reactive congestion control in an asynchronous transfer mode (ATM) network where the network is formed by the interconnection of nodes each including a forward path for transfer of information from source to destination through the network and a return path for returning congestion control signals.

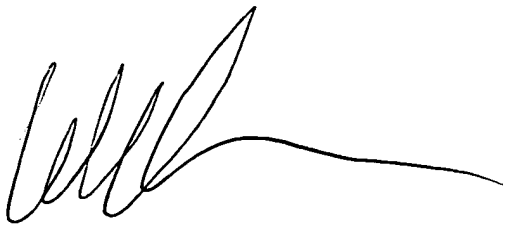
U.S. Patent No. 6,028,842 to Chapman et al. relates to a technique by which the traffic is dynamically classified at a node and delivered downstream according to the Quality of Service (QOS) specified by the assigned class or by such a network administrator as the network operator.

The above prior art are cited to further show the state of the art with respect to detecting and controlling congestion during transmission of data between the source and destination using various flow control techniques.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to F. Lin Khoo whose telephone number is 571-272-5508. The examiner can normally be reached on flex time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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